Our lecture today will be about the ORAL MANIFESTATIOS OF SYSTEMIC DISEASE...

☙ First of all let's talk about the biology of the mouth; in dermatology we are concerned **about the oral epithelium** composition, it's composed of two main parts:

1- **Keratinised** ⇨ which is the out layer, a horny layer made of keratin. Masticatory mucosa which is present in the hard palate, gingiva and posterior tongue, all of these are composed of keratinised epithelium.
2- **Non-keratinised** ⇨ lining mucosa; buccal, labial, alveolar, floor of the mouth, ventral tongue and soft palate.
3- **Specialised** ⇨ which is the dorsum of the tongue for taste.

☙ As we all know that the mouth is considered a part of the immune system. We have many factors that play an important role in the immunity of the human being like the:

(1) MECHANICAL FACTORS;

- *Movement of the tissue, palate & tongue*
- *Swallowing of foreign materials is also a part of the defence mechanisms*
- *Salivation which has the IGA that plays a role in the immune response.*

→ **Xerostomia**; Dry mouth due to decrease in salivation, those people have defect in their immune system so they are more susceptible for oral infections.

(2) Saliva; as we already said that it plays a role in the immunity. We have;

- *Some enzymes*
- *mucin & IGA*

(3) GALT "Gut-associated lymphoid tissue" which is composed of;

- *B lymphocytes that secretes immunoglobulin especially IGA*

(4) Cellular;

- *neutrophils and other white blood cells*

→ If any abnormality happens in the immunity system in the cellular part some ulcers, periodontal disease and gingivitis can occur.

☙ Diseases affecting teeth;

1) **Causes loosening and early loss of teeth**; there are many factors :

◆ *Local factors: gingivitis*

◆ *Systemic factors: diabetes mellitus, low immunity diseases(HIV, Leucopoenia) or people who have disorders in connective tissue (Lupus Erythematosus)*

2) **Discoloration;** there are some factors:

◆ *Extrinsic causes: poor hygiene, smoking, stains & drinks.*

◆ *Intrinsic: Drugs (Tetracyclines), flurosis, porphyria (metabolic disease that affects the teeth and stains them, the problem is the presence of a defect in the metabolism of heme" that makes the haemoglobin"), kernicterius (form of brain damage caused by excessive jaundice).*

3) **Ther skin diseases like Ectodermal dysplasia;** that causes:

◆ Loss of hair in females & males

◆ hypodontia and malformed teeth

☙ Diseases affecting periodontium;

1) **Gingival bleeding :**

◆ *Local causes: gingivitis, periodentitis, acute necrotizing gingivitis (which is a result of poor hygiene, HIV, Neutropenia & leukemia)*

◆ *Systemic causes: Leukaemia, HIV, clotting diseases & drugs (anticoagulants) scurvy.*

2) **Swelling: (** it has many different causes) ;

◆ *Local: Chronic Gingivitis, hyperplastic (people who use "Mouth breathers" will have hyperplastic gingiva and swelling), when you see an area with localized swelling you will suspect the presence of tumors or cysts.*

◆ *Systemic: Pregnancy, drugs (for example: Phenytoin, ciclosporin, Nifidipine), sarcoidosis, leukemia, Infiltartives causes: [Amyloid (deposition of certain proteins), Mucopolysaccharides (one of the storage diseases; accumulation of certain products), mucolipidosis, lipoid proteinosis], crohn's disease(inflammatory bowel disease "IBD") , Wegner's granulomatosis (a kind of vasculitis).*

3) **Gingival redness**: *also it has many factors or causes;*

◆ *Local causes: chronic gingivitis (which is the commonest cause of gingival redness).*

◆ *Systemic causes: Desqumative gingivitis, HSV "herpes simplex virus", Vascular abnormalities (hemorrhagic heredity telangiectasia "HHT", Haemangioma & Kaposi sarcoma "KS"), Bullous disease(dermatological disease which is characterized by the presence of blisters on the skin and mucous membranes "fluid containing lesions", an example is Pemphigus , Allergic response because of food, medications and other factors.*

4) **White patches:**

◆ *Local causes: these factors are important because some of the times Leukoplakia can be a carcinoma so we have to know the local cause, it could be frictional or in smokers, carcinomas, burns.*

◆ *Systemic causes: Candidiasis,* lichen planus*, Lupus, Hairy Leukoplakia (its important because it is a side effect in people having a disease caused by HBV virus) , white-sponge naevus (which is a heredity condition that has multiple white lesions), Syphilitic.*

5) **Pigmentation;** it considered normal in people with dark skin colour

◆ *Local causes: Amalgam tattoo, melanocytic macules*

◆ *Systemic causes: Addison's disease, Kaposi sarcoma, melanoma & drugs (for instance; Hydroxychloroquine and minocycline).*

{The dr showed an example of pigmentation, you can find it in slide # 11 }

6) **Ulcers;** which is very important and common;

◆ The *underlying medical diseases* that we have to be aware of when we see ulcers are: **(a) Haematologic abnormalities**: Anaemia, B12 deficiency, leukaemia & Neutropoenia. All of these can cause mouth ulcers. (b) GI conditions; Coeliac disease, IBD.

◆ *Local causes:* like trauma and radiotherapy.

◆ *Systemic causes:* connective tissue diseases; systemic lupus erythrmatoses, Behcet's Syndrome, Sweet's and Reiter's syndrome.

- *Infections:* Herpes simplex virus, chickenpox, Herpangina, IMN, HIV,TB & syphilis.

- *Rare causes of ulcers:* Eosinophilic ulcer, necrotizing sialometaplasia.

- *Skin causes of ulceration;* ELP, Pemphigus, *Bullous disease" that affects skin and mucos membranes", Erythema Multiforme"that also affects mucous membranes",* Dermatitis Herpetiformis **(***DH),*

- *Drugs;* Cytotoxic drugs, NSAIDS and Alendronate can as well cause ulceration

7) **Blisters;** (fluid contain lesions that are found either in skin or mucous membrane including the mouth).

- *Local causes*: Burns, Mucoceles

- *Underlying cause:* Immunobullous conditions usually present as desqumative gingivitis (Pemphigus, Bollous disease- mucous membrane pemphigoid (MMP)-) & herpes simplex virus.

☙ Desquamative Gingivitis;

→ Important type of gingivitis but not common, when we see it we have know the underlying causes of it Persistent red glazed sometimes painful labial gingival, usually sparing margins.

- the **causes of it in order are** > mucous membrane pemphigoid, lichen planus, bullous penphegoid (BP), Dermatitis Herpetiformis & Linear IgA disease (LAD).

- **Treatment >** to improve hygiene, Topical Steroids and sometimes systemic medications according to the disease that caused Desquamative Gingivitis or other immune suppressants

{Refer to slide # 16 to see the figure that shows "Desquamative Gingivitis"}

☙ Drug induced gingival swelling

- Phenytoin, Ciclosporin, Nifedipine and Diltiazem, all these drugs can cause gingival swelling especially after prolonged use of these drugs.

- Managment of it is by having good oral hygiene and plaque removal before starting the treatment and sometimes we could need surgical removal or excision.

☙ Disorder of oral mucosa (i think we might repeat some of the stuff said again)

→ A while ago we were talking about the gingiva only, but now we will talk about oral mucosa; like buccal , tongue & other mucosa's. We will start with:

1) **Pigmentation;**

- its normal in dark skin, asians and mediteranians have dark mucosa.
- It will be bilateral and symmetrical.
- Melanocyitc macules can also occur in the gingiva or other mucosa.
- Other causes are; melanoma, systematic diseases like : Addison's disease and ectopic ACTH reducing tumor, exogenous ACTH. drugs which are the same (minocycline, antimalarials, oral contraciptives).Malignant acanthosis nigricans (this is a cutaneous disease, its usually in flexures, like the axilla). In rare causes like hemochromatosis and idiopathic causes.

2) **Mucosal redness;** we will repeat some main points mentioned in gingival.

- oral redness is present in denture wearers from candidiasis, also herpes simplix virus.
- Another cause is inflamatory origin; luchus planus, pemphigus allergic disease.
- Now for vascular reasons there is Telangiectasia, kaposi sarcoma, port-wine stain (this is a vascular malformation , affecting skin with red patches)
- nutritional deficiencies ; low vitamins , low B12 , Low folate , low iron which causes red tongue. Toxic drugs causing mucositis.
- geographical tongue, it might be from normal variation or underlying causes - areas of erythema and fissuring.
- For **managment** we look at the underlying cause of its B12, or iron and we give them supplements OR other underlying causes.

3) **Ulcers**;

- local causes; such as trauma, orthodontics appliance, tumours. Recurrent aphthous stomatitis.
- systematic causes: haematological, GI, dermatological, vasculitis and all these reasons we already talked about them .

→ ***Recurrent aphthous stomatitis,*** this is important. Now when we deal with a patient that has Recurrent aphthous stomatitis, we need to make sure there is no underlying causes.

- There is recurrent episodes of ulcerations, and the ulcerations has types. There is minor, major and herpetiform. If we rule out all the underlying causes such as B12 deficiency , anemia , dermatoligical etc... we will end up with lastly the idiopathic Recurrent aphthous stomatitis.

Now for the minor ulcer its size is small, less than 5 mm. And the number is small too, less than 10. As for the duration its less than 10 days.
The major has a size bigger , from 5 to 10 mm. The number is less than 10. Duration is more than 10 days. Herpetiform is small, but it has a huge number 10 to 100
ulceration and durations is more than 10 days. This is the most painful one.

- Investigation as we said we look at the recurrent ulceration, we take full blood count, ESR, we look at the levels of B12 and iron , Antiendomysial antibodies.
- If its negative then we will treat the ulcers, most cases will remission , espicially the minor. We can treat them by topical anti inflammatory drugs; steroids, colchicine. Also we can use systematic drugs ; steroids, colchicine, dapsone, thalidomide (this is now rare to find in the world)

{The picture in slide #27 is an example of an oral aphthous ulcer, this is a major one.}

4) **White patches**;

◆ *Infective causes*: such as candida and hairy leukoplakia.

◆ *Inflammatory causes:* such as lupus plannus , lupus erythromatosis.

◆ Liver and renal disease also can cause this.

◆*Genetic causes:* White sponge nevus is also another reason.

{Slide # 29: This is an example of hairy leukoplakia, its shaggy, whitish plaque, usually on the tongue. Also the next picture is leukoplakia, white plaques.}

5) **Blisters;**

◆ *Local causes:* might be from burning, mucocele.

◆ *Underlying causes:* Autoimmune bullous disease, pemphigus, chikenpox, Herpes simplex virus, coxackie.

☙ Behcet's syndrome

→we said a while ago about the recurrent aphthous stomatitis that we should rule out the systematic disease.

- The *major& minor criteria:*

for behcet's disease is oral ulceration. To diagnose Behcet's disease we must have oral ulceration (major) plus two of the minor (proteinurea, aneurysms, arthralgias)
In this disease the oral aphthous is present in 90-100%. There is genital ulceration, occular manifestations (iridocyclities, vasculitis). Also affecting CNS with meningioencephalitis. Affecting skin (pustules, pathergy)

- *Management of oral ulceration*:
  - **Mild cases** > as we said about the recurrent aphthous stomatitis, we treat with topical anti inflammatory drugs, topical steroids, aminosalicylic acid.
  - **Severe cases** > we use cyclosporin , colchicine, azathioprine. The most important morbidity is ocular one, as it can lead to blindness!

☙Lichen planus:

- It's a cutaneous disease, giving skin lesions with violaceous colour, papules. It could involve hair and nail and mucous membrane.

- In the mouth it can be white areas in many forms; linear, reticular. Or like a leukoplakia. ***The erosive is a very important type because there is a risk of squamous cell carcinoma***. It needs aggressive management and follow up. Lichen planus is one of the reasons for desquamative gingivitis.

- *Management depends on the severity*; **mild**> topical steroid, **moderate**>topical tacrolimus, **severe**> we use oral steroids, cyclosporin, azathioprine.

{Slide #36: Pemphigus is bullous disease. Bullous diseases have fluid containing agents, called vesicles. Depends on their size, in mucous membranes it appears as erosions.}

☙ There is oral involvement for various diseases in endocrine system:

- Addison's: mucosal hyperpigmentation
- Congenital hypothyroidism: macroglossia
- Acromegaly:macroglossia
- Diabetes Malletus: Xerostomia, candidiasis
- Pregnancy: Gingivitis, Epulis

GIT:

- Pernicious Anemia: ulcers, glossitis, angular stomatitis, red lesions
- Coeliac disease: oral ulcers, glossitis, angular stomatitis
- P-J synd: melanosis (pigmentation in skins and lips) Slight increase of risk of malegnancy.
- Crohn's disease: ginginval Hyperplasia, ulcers, golssitis, cobblestoning of mucosa

Hematologic diseases:

- Hematinic deficiency: Burning, ulcers, glossitis, angular stomatitis
- Sickle cell disease : osteomyelitits of Jaw
- WBC : Ulcers, infections
- Hemostsis deficiency: bleeding
- Leukemias: gingival swelling, bleeding, infections and ulcers

Renal patients:

- Chronic renal failure: Xerostomia, Halitosis (bad mouth odour), Leukoplakia and bleeding

[After that the doctor showed a slide about drugs that causes changes in teeth and gingiva and he said it's not very important.]

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